

those of a central office without overly burdening LECs.”<sup>68</sup> The Commission pointed out that providing expanded interconnection at other remote nodes or locations would require the LECs “to provide for maintenance of or interconnector access to equipment at locations not regularly visited by LEC personnel, as well as security for both LEC and interconnector equipment.”<sup>69</sup> The Commission further explained:

Remote nodes and other similar locations are not generally used to house a range of equipment. Instead, they typically house only equipment necessary for specific functions such as repeater. Long term network planning could be complicated considerably if LECs had to anticipate use of such locations for broader purposes.<sup>70</sup>

For the same reasons, the Commission should recognize the difficulties that would arise from adopting the *Notice's* tentative conclusion to expand collocation to “all buildings or similar structures owned or leased by the incumbent LEC that house LEC network facilities” and deeming “structures housing LEC network facilities on public rights of way, such as vaults containing loop concentrators,” to be LEC premises. (See *Notice*, para. 71.) Section 251(c)(6) requires collocation only where necessary for interconnection or access. Until the Commission decides the points of interconnection and access, the Commission cannot know where collocation may be necessary. Even then the difficulties identified before by the Commission should be considered in determining the “premises” for collocation.

---

<sup>68</sup> *Expanded Interconnection with Local Telephone Company Facilities*, 8 FCC Rcd 7374, para. 57 (1993).

<sup>69</sup> *Expanded Interconnection with Local Telephone Company Facilities*, 7 FCC Rcd 7369, n. 243 (1992).

<sup>70</sup> *Id.* at n. 244.

In addition, the only equipment that may be “necessary for interconnection or access to unbundled network elements” under section 251(c)(6) is the equipment that the Commission has designated for interconnector collocation in the past: “[o]nly central office equipment needed to terminate basic transmission facilities.”<sup>71</sup> (See Notice, para. 72.) The Commission has found that the collocation of other equipment, such as enhanced service equipment, switches, or CPE, is unnecessary for expanded interconnection.<sup>72</sup> This conclusion is equally true with regard to collocation for local competition.

Moreover, collocated equipment that is “necessary for interconnection or access to unbundled network elements” must indeed be used for interconnection or access by the interconnector via its own network. That is, the Act reaffirms the Commission's requirement that “interconnector transmission equipment must be located in LEC central offices to terminate interconnector circuits.”<sup>73</sup> Contrary to MFS's past position, the LECs need not collocate equipment to be connected at both ends solely to a LEC's interoffice mileage (“IOM”) facilities.<sup>74</sup> MFS's suggestion would expand collocation to include

---

<sup>71</sup> *Expanded Interconnection with Local Telephone Company Facilities*, 9 FCC Rcd 5154, para. 94 (1994).

<sup>72</sup> *Id.*; *Special Access Expanded Interconnection Order*, paras. 93-94; *Switched Transport Expanded Interconnection Order*, para. 63; *Expanded Interconnection with Local Telephone Company Facilities*, 9 FCC Rcd 2718, para. 35 (“*Transport Phase II Expanded Interconnection Order*”).

<sup>73</sup> *Transport Phase II Expanded Interconnection Order*, para. 32.

<sup>74</sup> MFS's Petition For Declaratory Ruling, December 4, 1995; See Opposition By Pacific Bell and Nevada Bell, December 29, 1995, *Expanded Interconnection with Local Telephone Companies*.

IDCMA's proposal to "use space in LEC central offices for the collocation of customer equipment to be connected to LEC-provided transmission facilities."<sup>75</sup> This architecture would quickly start exhausting our central office space<sup>76</sup> and is outside the purposes of the Act.

The Commission also asks whether it should "establish guidelines for states to apply when determining whether physical collocation is not practical for 'technical reasons or because of space limitations.'" (*Notice*, para. 72.) No mandatory guidelines are needed. Parties and states will need to deal with this issue on a case by case basis. It would be helpful, however, if the Commission would acknowledge the value of Bellcore's Network Equipment-Building System ("NEBS") requirements in making determinations concerning the amount of space needed for equipment in central offices, as well as for other specifications relating to physical protection of networks.<sup>77</sup>

It further is indisputable that "reduced reliability or other harm to the network" should "be considered as a technical reason for justifying a refusal to offer physical collocation." (See *Notice*, para. 72.) Because the Commission has allowed the LECs to include the requirement that equipment comply with NEBS, we have not had to refuse any requests for collocation for this technical reason. With new demands from local competition, however, the possibility should not be foreclosed. Continued reliability of communications

---

<sup>75</sup> *Expanded Interconnection with Local Telephone Company Facilities*, 7 FCC Rcd 7740, para. 49 (1992).

<sup>76</sup> *E.g.*, equipment attached to IOM tends to be larger capacity (at least DS3) than equipment attached to channel terminations (often DS1).

<sup>77</sup> See *Ex Parte* letter from Jay Bennett, Pacific Telesis, to William F. Caton, FCC, CC Docket No. 93-162, April 25, 1996.

is essential. NEBS requirements and other industry standards, as well as results from any tests or experience elsewhere, could be used as evidence to prove a claim and justify refusal.

Finally, the Commission should reiterate its policy of allowing “reasonable restrictions on warehousing of unused space by interconnectors.”<sup>78</sup> Allocation of space should continue to be on a first-come, first-served basis. (See *Notice*, n.97.) Our allocation of space in 100 square foot sections, with a maximum of 400 square feet for any one interconnector, helps ensure efficient use of space.<sup>79</sup>

c. Loops, Switches, Transport, Signalling, and Databases Are the Unbundled Network Elements Necessary to Accomplish the Act’s Objectives. Moreover, New Entrants Deem These Elements Sufficient For Competitive Entry.

The Commission tentatively concludes that it should identify “a minimum set of network elements” that must be unbundled for any requesting telecommunications carrier, “and, to the extent necessary, establish additional or different unbundling requirements in the future as services, technology, and the needs of competing carriers evolve.” (*Notice*, para. 77.)

We suggest the Commission identify a set of network elements that would be sufficient, but not mandatory, to comply with the unbundling requirements of Section 251(c)(3) and Section 271(c)(2)(B)(ii). The Commission should declare that Section 251(c)(3) and the corresponding interLATA checklist item are satisfied where an interconnection agreement provides, upon request, access on an unbundled basis to (1) local loops, transport, and switching as required by Section 271(c)(2)(B)(iv)-(vi), (2) such other

---

<sup>78</sup> *Special Access Expanded Interconnection Order*, para. 80.

<sup>79</sup> See *Direct Case of Pacific Bell*, pp. 58-61, 66, August 20, 1993, CC Docket No. 93-162.

network elements as the BOC currently makes available, (3) upon request, unbundles such other network elements as this Commission or the relevant State commission requires to be unbundled as of the date the interLATA application is filed, and (4) contains or references a publicly disclosed, nondiscriminatory process for considering bona fide requests from interconnecting parties for access to additional network elements on an unbundled basis at technically feasible points within a reasonable time.

The Commission requests information regarding the policies that the States have adopted to address network unbundling. Since 1989, the CPUC has had a policy of unbundling and nondiscriminatory access to network elements. The CPUC is currently considering what network elements should be unbundled and how access to them should be priced. Costing principles and a partial list of network elements have been agreed to by consensus; TSLRIC cost studies are being conducted and reviewed; and hearings are being held on the pricing and tariffing of basic network functions including those above.<sup>80</sup>

This process to consider requests for access to network elements on an unbundled basis could be fundamentally the same as the process for considering requests for additional technically feasible interconnection points. The Act, however, requires that additional criteria be considered for unbundled elements. To begin with, the requested element must be needed to provide a telecommunications service.<sup>81</sup> Section 251(d)(2) requires that no network element be made available unless the Commission considers, at a

---

<sup>80</sup> See *Open Access to Bottleneck Services and Network Architecture Development (OANAD)*, CPUC D.95-12-016, slip op. (December 6, 1995).

<sup>81</sup> Both Section 251(c)(3) and the definition of network element in Section 3(29) of the Act make clear that the element must be to provide a telecommunications service.

minimum, whether (A) “access to such network elements as are proprietary in nature is necessary; and whether (B) “the failure to provide access to such network elements would impair the ability of the telecommunications carrier seeking access to provide the services that it seeks to offer.”<sup>82</sup> This provision requires a two-part showing: (1) that the requested element is not proprietary, or that if it is, access to it is “necessary;” and (2) that failure to provide access would impair the ability of the telecommunications carrier seeking access to provide the service that it seeks to offer. In making this showing the requesting carrier should demonstrate that the requested elements cannot be obtained elsewhere on reasonable terms and conditions. Obviously, if a telecommunications service may be provided by reselling one of the LEC’s wholesale services, the LEC would not be required to provide access to corresponding network elements.

The Commission seeks comment on whether it should establish minimum requirements that might include, for example, “provisioning and service intervals, nondiscrimination safeguards, and technical standards.” (*Notice*, para. 79.) The Commission says that:

minimum national requirements governing the unbundling of network elements would likely offer several advantages. These requirements could include, for example, provisioning and service intervals, nondiscrimination safeguards and technical standards. Such requirements would provide uniform technical requirements, and would enhance the ability of new entrants to take advantage of economies of scale and to plan and deploy networks stretching across state and LEC boundaries. We note that telecommunications equipment has heretofore been provided by national manufacturers selling to a nation-wide market, without substantial regional or state-to-state variation in equipment design. Minimum national requirements also may ensure some level of network and equipment interoperability between both competing and noncompeting carriers. (*Notice*, para. 79.)

---

<sup>82</sup> Act, Section 251(d)(2).

This is an issue best left for determination by private parties, States and industry fora. Rather than establishing mandatory, technology-specific rules, the Commission should establish guidelines to aid the industry in evaluating and provisioning requests for access to network elements. The Commission should not include in those guidelines technical requirements for network elements to ensure interoperability between the networks of the competing carriers and the incumbent carriers. The technical requirements for each network element have long been established by various industry standards bodies, such as the OBF, the T1 Committee, and the IILC. National manufacturers design and build their equipment to the standards set by such technical fora. However, each incumbent carrier may deploy any number of network elements from the same or from many vendors, in which case the technical capability and functionality of the element may differ substantially. A LEC may deploy local loops made of copper, fiber optics, cable, or wireless technology. A loop may be digital or analog; it may contain subscriber loop carrier (SLC) or all twisted pair. The issue is not whether there is "substantial regional or state-to-state variation in equipment design." The Commission could not issue mandatory technical specifications for unbundling without, in effect, dictating how the network should be structured and what technology is deployed.

Mandatory rules could, as the Commission suggests, be written to apply only to "similarly structured" networks, so that, for example, LECs that deploy analog technology were not forced to replace it with digital, or copper with fiber. But there would still be innumerable disputes over what "similarly structured" means. And even then, a "minimum requirement," if combined with pricing rules that do not allow LECs at least as much profit

from unbundled network elements as from retail services, would be a powerful deterrent against the deployment of technology. LECs will not invest in their networks if it only benefits their competitors.

There also are substantial differences between LECs in ordering and billing systems that will result in differences in reasonable provisioning and service intervals. As we noted in response to the Commission's similar proposal for "just, reasonable, and nondiscriminatory interconnection" (see above, §I.B.2.a(2)), access services, which according to our competitors present an equal threat of discrimination, have never been subject to nationwide mandatory provisioning or service intervals. They are subject to different provisioning and service intervals by every LEC in every State. It has never been a problem, let alone prevented IXC's from building nationwide networks.

(1) *Loop, Switch and Transport Are the Network Elements That Should Be Unbundled. A Bona Fide Request Process Should Be Adopted For Further Unbundling. Sub-Element Unbundling Is Unnecessary for Purposes of the Act, and Must Be Left To Negotiations.*

The Commission seeks comment on a "broad" definition of network element such that "an entire local loop, for example, could constitute a single network element, or comprise several network elements." (*Notice*, para. 83.) The Commission also asks whether there is a distinction between the facilities and equipment used in providing a service and the service itself; and whether requesting carriers may order and combine network elements to offer the same services that an incumbent LEC offers for resale. (*Notice*, paras. 84-85.) Likewise, in paragraph 86, the Commission interprets Section 251(c)(3) as "requiring incumbent LECs ... to provide requesting carriers with the ability to obtain a particular



element's functionality, such as a local loop's function of transmitting signals from a LEC central office to a customer premises." (See also *Notice*, para. 90.)

As enacted, the statute does not require the "subdivision" of the logical access elements identified by Congress: local loop transmission from the CO to the customer's premises; local transport from the trunkside of a switch; or local switching unbundled from transport, local loop transmission, or other services.<sup>83</sup> If these network elements are subdivided, they must still be subject to the overriding requirement of technical feasibility. For example, a common transport trunk should not be "unbundled" into individual channels. This would amount to "unbundling" bits from a bitstream. Similarly, a switch should not "unbundled" into switch capacity, which is, to the degree we understand it, only bytes. Proposals like these are intended to facilitate regulatory arbitrage and no more. They do not promote either economic efficiency or network efficiency; they undermine them both.

The Commission must also recognize that, as the network is disaggregated beyond such elements as loop, port, and transport, cost recovery issues become even more important and complex. That is, the costs of unbundling will increase as competitors seek elements beyond logical elements, and the degree of joint and common costs will increase because the direct costs of smaller and smaller network elements will become harder to identify.

As the Commission itself intimates (*Notice*, paras. 84-85), network elements must not be used to evade legitimate restrictions on resale or avoid paying access charges. If unbundled network elements are allowed to substitute for services such as access or resale

---

<sup>83</sup> See Act, Section 271(c)(2)(B).

services, they will cannibalize the other product lines. The Commission could, and should, prohibit such tariff arbitrage. But that is not all. It must also refrain from setting intrastate prices. Each LEC has a unique product continuum: a unique mixture of services; unique rates, rate structures, and service definitions; unique cross-elasticities of demand between services; and unique ways of recovering universal service subsidies or contribution in intrastate rates. This delicate balance, determined in decades of fact-intensive State proceedings, could not be altered except by State regulators without disastrous effects on intrastate revenue requirements. Prices and service definitions that assure cost recovery and reflect a LEC's product continuum and overall rate structure cannot be legislated in a "national" rulemaking, conducted under extreme time pressures and without benefit of trial-type hearings or reliable evidence.

Contrary to what our competitors suggest, there is no requirement for LECs to "provide requesting carriers with the ability to obtain a particular element's functionality." (*Notice*, para. 86.) Section 251(c)(3) requires only that we "provide ... unbundled network elements in a manner that allows requesting carriers to combine such elements in order to provide telecommunications service." No obligation attaches to the individual piece parts that are requested, other than the mutual obligation that a network element be ordered for the purpose of, and be capable of being combined to provide a telecommunications service. However, as a practical matter, we do not expect the capability of network elements to provide the service for which they were developed to be a matter of frequent dispute. The technical parameters of unbundled elements will be included in agreements if they are not already specified in State tariffs. But industry fora, local regulators, and carriers, are all

better versed than the FCC in what local networks can do and what those parameters should be.

Finally, the Commission should recognize that service packages -- such as a combination of vertical features offered in conjunction with residential phone service -- cannot themselves be subject to unbundling. Services are obtained pursuant to Section 251(c)(4) and the avoided cost standard; equipment and facilities are obtained pursuant to Section 251(c)(3) and the cost plus profit standard.

(2) "Technically Feasible" Access Depends On Several Factors that Must Be Evaluated in the Context of Specific Requests. Under Section 251(d)(2), the Burden of Showing the Feasibility of Any Request Must Be On the Requestor, Not the Incumbent LEC.

The Commission requests that parties describe each network element for which they believe access on an unbundled basis is technically feasible at this time; whether a dynamic definition of "technically feasible" is practical; and to comment on any state approaches the Commission could use as a national model. (*Notice*, para. 87.)

The CPUC is about to conduct hearings to determine whether it is feasible to unbundle subscriber links, ports, signal links, signal transfer points (STPs), service control points (SCPs), network access channel connections, entrance facilities, direct-trunked transport, tandem-switched transport, and trunkside ports. Below, we discuss which of these are technically feasible to unbundle. As part of the CPUC proceeding, we have proposed tariffs that will address provisioning and service intervals, nondiscrimination safeguards, and technical standards. The remaining issues for workshops and hearings concern what the

specific terms of unbundling should be, and whether it is technically feasible to unbundle these elements.

Our interconnection agreements with CLCs have provided access to unbundled subscriber loops and local transport. We believe that a consensus of States and privately negotiating parties who have considered the matter have also determined access to these same elements to be technically feasible. This consensus was also reflected in Section 271 (subsections (c)(2)(B)(iv-vi)). Therefore, we suggest these fundamental network elements are sufficient but not necessary to satisfy the requirements of Sections 251. Parties should be free to (and no doubt will) negotiate access to other elements where technically feasible.

For other elements, we believe there are technical feasibility issues that will differ from State to State that are far too complex to resolve fairly in a Federal notice-and-comment rulemaking. Some capabilities will be technically feasible only on a very limited basis. Even where technically feasible, the cost of unbundling may differ dramatically from carrier to carrier because of differences in technology, support systems, and demand. The Commission is thus correct when it suggests that what is “technically feasible” will be dynamic. The Commission should take no action other than to adopt a safe harbor, and sanction the bona fide request process we have described (above, §I.B.2.c).

The Commission also asks whether the technical feasibility of interconnection at a particular point affects, at least in part, the technical feasibility of providing access to a network element on an unbundled basis. For the most commonly sought elements (loops, switch, and transport) the answer is generally no. For example, one of the most common forms of interconnection today is through a collocation cage, where unbundled access to links, switching and transport are available (and where call completion also takes place). The

question, however, highlights an important distinction in the Act. Section 251(c)(2) (interconnection) directs that competing networks be joined for the seamless interchange of exchange and exchange access traffic. And, once joined, signaling and transmission quality need to be uniform and transparent to customers. But access to unbundled elements (including access to data bases, signaling, as well as call completion) are separate functions which entail additional costs for LECs, and require additional charges. The Act details these separate functions in separate sections (e.g., unbundling in Section 251(c)(3) and call termination in Section 251(b)(5)). Therefore, while interconnection provides access to unbundled elements (and call completion), it is not correct to lump all these features into a single element, either in a physical sense or for purposes of pricing.

The Commission tentatively concludes that “LECs have the burden of proving that it is technically infeasible to provide access to a particular network element.” (*Notice*, para. 87.) The Commission also requests comment on the requirements of Section 251(d)(2). We disagree with the Commission’s tentative conclusion. It conflicts with Section 251(d)(2), and would also be unwise as a matter of policy. Section 251(d)(2) obliges the Commission to consider, at a minimum, whether failure to provide access to any network elements “would impair the ability of the telecommunications carrier seeking access to provide the services that it seeks to offer.” If the network element is proprietary, the requesting party must show and the Commission must also determine that access to it is “necessary.” These are ultimate facts that only the requesting carrier, not the LEC, can demonstrate.

As a policy, shifting the burden of proof to incumbent LECs to show that it is technically *infeasible* to provide access to a network element could easily be manipulated to

delay interLATA entry indefinitely. State arbitrators will be able to determine for themselves, with their own extensive fact-finding tools and without legalistic encumbrances, whether access to a network element is technically feasible. Congress provided for both *mediation* and *arbitration* of disputes precisely to avoid legal formalisms.

Incumbent LECs who fall within the safe harbors we advocate would be presumed to have met their burden of proving Section 251 compliance. But this would not bar CLCs from rebutting the presumption, much as customers may show that a rate is unlawful even after it has taken effect. On the other hand, incumbent LECs who do not meet “safe harbors” would bear the burden of proving that they have nonetheless complied with Section 251 requirements when they file their Section 271 applications.

The Commission also suggests that “the unbundling of a particular network element by one LEC (for any carrier) evidences the technical feasibility of providing the same or similar element on an unbundled basis in another, similarly structured LEC network.” (*Notice*, para. 87.) This sounds fine in theory, but it would prove an extremely problematic standard. First, there are structural dissimilarities within networks. Second, it is debatable what “similarly structured” means. For example, two LECs may have the same equipment (such as a DMS-100 or 5ESS switch), but with different software, feature packages or interfaces. For years, equipment and software vendors have provided options in their products so that network providers can accommodate unique situations. In addition, because LECs do not have identical support structures, ordering, provisioning, administration, service assistance, maintenance practices, the technical feasibility and not least, the cost of unbundling will differ from carrier to carrier. The issue does not demand

national uniform technical rules or the creation of legal “burdens.” It demands a simple, flexible, non-adversarial process that is uniform across the country.

The subdivision of “network elements” vastly complicates feasibility issues. Access to a network element may be feasible, but this feasibility may be irrelevant unless collocation and access are feasible at the proposed point of division. As we explain below, this is not always the case. The Commission should take a simple approach, adopt as presumptively reasonable logical network elements such as the local loop, and leave the complications presented by sub-element unbundling to be worked out by freely negotiating parties. What is needed are not detailed, standardized regulatory determinations of technical feasibility, which may deter technology development and deployment, but a non-adversarial process to let contracting parties, industry fora, and States make such determinations for themselves.

The Commission asks “what minimum requirements, if any, [it] should adopt to ensure that LECs do not discriminate among requesting carriers.” (*Notice*, para. 91.) This requirement is self-effectuating. For more than fifty years, Section 202 of the Act has also prohibited unjust or unreasonable discrimination. But the Commission, recognizing wisely that what is “unjust or unreasonable discrimination” depends on the circumstances, has never promulgated “minimum requirements” under Section 202. Instead it has chosen to address what is “unjust or unreasonable” in thousands of adjudications of tariffs and complaints, based, as all such determinations are, on particular facts.

In reality, the potential for discrimination will be mooted by the need to meet technical parameters that agreements and State commissions attach to network elements.

Failure to meet these parameters would be grounds for a complaint, either in court, at State commissions or at the FCC. In addition, we expect very few network elements will be dedicated to specific CLCs, so we doubt the potential for such discrimination even exists. More commonly, facilities will be shared between incumbent LECs and CLCs.

(3) Specific Unbundling Proposals Should Track With Established Practices for Unbundling the Loop, Switch and Transport.

(a) Loop Unbundling Should Allow for Use of Unbundled Loops in Today's Environment. Sub-Loop Unbundling Should Be Negotiated, Not Mandated.

The Commission proposes to require incumbent LECs to provide local loops as unbundled network elements. It seeks comment on whether and to what extent the Commission should "prescribe a set of minimum requirements for unbundling and provisioning loops." (*Notice*, para. 95.)

Pacific Bell has agreed with MFS to unbundle loops between the subscriber premises and the central office (CO). Pacific Bell has also proposed to tariff three varieties of analog loops, including loops for the transmission of ISDN service. They can be connected to a CLC local switch using collocation facilities and expanded interconnection cross-connection, or using special access. The agreements and proposed tariffs contain technical specifications, service intervals, maintenance, and other material terms.

The Commission tentatively concludes that it should require further unbundling of the local loop, and seeks comment on which subloop elements are technically feasible to unbundle. (*Notice*, para. 97.) We disagree. Consistent with Section 271(c)(2)(B)(iv), the local loop element should be presumed to be the network function of



transporting telecommunications from a CO to a customer's premises.<sup>84</sup> The architecture or components that make up the loop are not consistent from carrier to carrier, and may not be consistent even within a carrier's network. There are numerous architectures and technologies to perform the loop function, but none of them is universal. For example, one method of constructing a local loop is distribution, feeder, and concentration. But in metropolitan areas there may be hardly any distribution plant, only feeder (which may be fiber or cable) going directly into a building -- in which case the intrabuilding cable (which in California is the property of the premises owner) is the "distribution." The LECs are also markedly different in the extent to which they have deployed SLC. An example of an alternative loop architecture where sub-loop unbundling is technically infeasible is the Pacific Bell broadband network. This network uses a dynamic radio frequency spectrum allocation scheme for telephony service between the demarcation point at the subscriber premises and the CO equipment. Subdividing the telephony path anywhere between the subscriber demarcation and the CO equipment would invalidate that scheme and thus the design of the network. Obviously, mandatory unbundling specifications would deter the deployment of such new technology.

---

<sup>84</sup> There will be exceptions even to this presumption, which can be dealt with in the bona fide request process. For example, there are special requirements that would apply to unbundling Pacific Bell's broadband loops.

(b) The Provision of Switching Ports Satisfies the Requirement to Unbundle Local Switching. Unbundled Switch Capacity Is Not Practical, and Certainly Must Occur Through Negotiation, If At All.

The Commission proposes to define this element as “unbundled switching capability.” (*Notice*, para. 98.) We support this definition. Pacific Bell has also proposed to the CPUC to provide two types of local switching ports, one to provide switching capability for business or residential service, and one for customer owned pay telephones (COPT). A basic port provides dialtone and a telephone number, enabling features such as translations, local switching, answer supervision, and touch tone capability, and access to other services such as vertical services, operator services, E-911, and all toll calling. A COPT port adds features for use with “smart” payphones.

The Commission also observes that some parties have sought to define local switching in terms of switching “capacity.” (*Notice*, para. 99.) Others have described a “local switching platform” in terms of “virtual” switch capacity. (*Notice*, para. 100.) This is little more than an attempt to disguise a pricing issue as a technical issue. The only purpose of this proposal is to fractionalize rates for local switching access service, recasting it as a “network element” in order to obtain it at prices at or near incremental cost. It makes no economic or technical sense. The logical network element is the switch itself, to which full access is provided by access to a switching port. The network element is not some virtual portion of the switch memory or features. As we describe just above, and as the Commission appears to agree, access to a switching port “all the capabilities of the local

network” and is “effectively equivalent to the LEC’s bundled retail local service offering minus the loop.” (*Notice*, para. 101.)

Call processing features such as local usage, custom calling, or call waiting are not network elements, but retail communications services. As such, they should be provided under the resale provisions of Section 251(c)(4).

The Commission observes that a “competitor may seek to provide certain call processing features to its customers by reselling the incumbent LEC’s call processing services.” The Commission therefore seeks comment on the “importance of unbundled access to the incumbent LECs’ advanced call processing features, such as single number service.” (*Notice*, para. 111.) The technical feasibility of unbundling switching features and functions such as call processing services will be different for different switch types. even if the call processing services are provided via remote databases. Frequently, a feature will not function in precisely the same way in different types of switches. Occasionally, it will function with one switch, but not at all with another. Technical feasibility may also be affected if a request is inconsistent with any of the carrier support systems, such as the administration, provisioning, maintenance, ordering or billing support systems. Thus, it may be that, while a request itself is technically feasible in terms of the switch hardware and software, the support systems necessary to order, provision and bill the new service may not be technically capable of supporting the new feature.

The Commission suggests that Section 251 requires incumbent LECs to provide access to unbundled AIN elements. The Commission also asks “what role, if any, the LEC proposal for a testing program should play with regard to access to signaling and

database elements that we address in this proceeding.” (*Notice*, paras. 113, 114, 115.) The record compiled by the Commission in the *Intelligent Networks* docket demonstrated amply why direct access to AIN is technically infeasible and therefore not required by Section 251. Among other things, unmediated interaction between networks could compromise network security and cause service problems.

AIN (as developed by the vendors) does not currently provide the required network protection, security and data partitioning required to support unbundling to multiple service providers. Current AIN service providers (including the LECs) already have experienced difficulties in introducing services using AIN due to unexpected interactions with existing services, inadequate vendor documentation, and operational difficulties. Due to the low penetration of recently introduced AIN-based services, few of these difficulties have affected large numbers of customers. However, since AIN provides capabilities that allow the centralized service control to modify data in the switch database and dynamically change the data involved in real-time call processing, it is possible for a service provider inadvertently or maliciously to affect the call processing of a LEC service or a third-party’s unless access to AIN capabilities is “mediated.” Although substantial discussion of “mediated access” has been underway for several years, there is no standard industry view of the functions required to mediate access to unbundled AIN.

Several activities are underway to clarify “mediated access” requirements. At the Information Industry Liaison Committee (IILC) several work groups are addressing these areas. As the Commission points out, several LECs, including Pacific, have proposed an industrywide cooperative effort to trial multiple approaches to AIN access in a laboratory

environment to clarify the network and business issues of third-party access to unbundled AIN. The LEC proposal specifically addresses testing of the types of access proposed by the Commission to signalling and database elements. These efforts are expected to add substantial detail to the high-level understanding of AIN mediated access over the next few years.

(c) Current FCC Rules on Unbundled Transport Meet the Requirements of the Act.

Pacific Bell has proposed to tariff unbundled local transport, including entrance facilities connecting the customer's switch with the Pacific Bell CO; dedicated trunked transport; end office trunkside ports; tandem switching; and tandem switched transport. These are more than sufficient to meet the transport unbundling requirements of both Section 251 and Section 271.

(d) Access to Signaling and Databases Must Keep a Workable Network Intact, and Must Not Compromise Network Security or Customer Privacy.

The Commission requests that we identify the points at which carriers interconnect with SS7 networks today and the signalling and database functions currently provided on an unbundled basis. It also requests that commenters discuss the technical feasibility of establishing other points of interconnection and other unbundled signaling and database functions not currently offered by incumbent LECs. (*Notice*, para. 108.) The Commission seeks comment on the relative importance to potential entrants of the various functions performed by incumbent LECs' signalling systems and databases, for example, call set up. The Commission notes that there are alternative suppliers of call set up services. It

also asks whether there are existing suppliers for other functions performed by the incumbent LECs' signalling systems and databases. (*Notice*, para. 110.)

Call set up and database access is commercially available, using SS7 signalling, from LECs, CMRSs, IXC's, and others. As we have pointed out, the Act does not require incumbent LECs to provide access to an element, such as call set up, that is available from alternative suppliers or through resale from us. Failure to provide such access would not impair the requesting carrier's ability to provide telecommunications services. Interconnected SS7 networks today carry call set up signalling through multiple companies. LECs that do not have their own SS7 networks may contract for access and transport via SS7 carriers (*e.g.*, ITN) to access distant databases such as 800 and LIDB. The CPUC also requires that CLCs be provided access to signalling protocols used in the routing of local and interexchange traffic; and access to database services, such as LIDB and 800.<sup>85</sup>

In our interconnection agreements, we have established CCS interconnection between our STP and CLCs' networks. Pacific Bell has also proposed to the CPUC to unbundle SS7 "A" and "B/D" links, providing interconnection between other carriers' service switching points (SSPs) or signaling transfer points (STPs) to our STPs.

Certain other SS7 links cannot be unbundled, either because we do not use the link type in our network, or our SS7 protocols do not support it, or for other technical reasons such as: the inability to screen TCAP parameters that control call processing and

---

<sup>85</sup> Companion to CPUC Resale Decision, App. E, p. 15. Such access should be deemed to satisfy 271(c)(2)(B). The Act does not require *direct* access to these databases. Unmediated access could raise security and privacy issues, require major expenditures, and is otherwise not technically feasible.

switch resources for authentication and security purposes; inability to limit congestion; or lack of network management enforcement procedures should SCPs not comply with SS7 protocol procedures.

Pacific submits that it is not technically feasible to provide unbundled access to an SCP (*i.e.*, separate from the SS7 link to the STP) at present. The STP routes signaling traffic between signaling links and provides necessary mediation functions such as user authentication and other security features, traffic management and congestion control, error detection and correction, and the rejection of corrupted messages. These capabilities are not present at the SCP, and failure to provide them would present a serious risk of network failure. Indeed, as network applications become inherently more flexible than existing offerings such as the 800 database and LIDB, even more complex mediation functions will be required to support internetworking. These additional functions have not yet been completely defined and, accordingly, will not be available in the near future. It follows that access to an SCP for SS7 or other purposes can be feasibly made available only through the STP.

As described above, we have proposed to unbundle links to the STP from the STP ports. However, there is no technically feasible way to unbundle internal STP functions. All of the STP's functionality is necessary as a package to protect and manage the efficient routing of signaling messages in the network.<sup>86</sup>

As we described in discussing access to unbundled AIN elements, AIN switches (or SSPs) have limited addressing capabilities for SS7 messages. They cannot

---

<sup>86</sup> See also *Ameritech Petition for Waiver*, DA 96-446, rel. March 27, 1996.

address multiple service providers because of the potential service and security risks we addressed earlier. This is an area for investigation in the LEC-sponsored trials for IN interconnection.

The Commission asks whether “the variation among [State] regulations governing unbundled signaling and databases reflect differing circumstances that should be accommodated in our rules?” (*Notice*, para. 109.) Different States have required different signalling interconnection arrangements because of different requirements that exist in their regions. This further indicates that required forms of interconnection may be attractive to some parties, but not required or wanted by others. Commission specifications of what is technically feasible will serve to limit creative applications of the technology and retard development of new services. Many new entrants will serve only limited geographic areas. They will not benefit from such “standard” forms of interconnection and may, in fact, be unable to implement their proposed services without the flexibility that a negotiated solution may provide.

The Commission also seeks comment “on the importance of unbundled access to the incumbent LEC’s advanced call processing features, such as single number service, in the market entry decisions of potential competitors ... [and] whether the software ‘building blocks’ used by incumbent LECs to create call processing services are network elements to be unbundled.” (*Notice*, paras. 110-111.) First, call processing services will be available under resale. They are not network elements to be “unbundled.” Second, intelligent network-based call processing is offered by several carriers other than the LECs. As we have described above, access and transport to databases such as 800 and LIDB is already



available from other providers. Suppliers of technology will actively compete for this business. The major IXCs today provide private virtual network services nationwide, hosted by relatively few centralized databases. Thus, even if they were network elements, they would not be required to be unbundled.

There are significant technical and security issues raised by the unbundling of software “building blocks” used to create services. Due to vendor implementation of these “building blocks,” third party access and manipulation is not currently technically feasible. Several LECs have initiated an industry effort to analyze potential interconnection points and establish laboratory tests and trials designed to identify potential solutions. The Commission should support this effort as a means of identifying future feasible unbundling areas in call processing.

The Commission poses another scenario in which “a competitor that is providing resold local exchange service might seek to distinguish its offerings by connecting its own call processing database to the incumbent LEC’s network, which would allow the competitor to provide call processing features not offered by the incumbent LEC.” The Commission seeks comment on “whether this type of interconnection is technically feasible without jeopardizing network reliability.” (*Notice*, para. 112.)

First, as we have said elsewhere, to preserve the statutory distinction between the pricing standards for unbundled elements and resold services, a CLC must be permitted access to unbundled elements only when combining them with some of its own equipment or facilities to offer exchange or exchange access services. It follows that network elements may be combined with resold services, but only if the CLC further combines the elements